Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-53 (Cancelled)

Claim 54 (New): A method for at least partially suppressing a vibration of a mechanical disturbance, comprising:

measuring a characteristic of the disturbance using a sensor; and

based on the measured characteristic, actuating an electrical circuit to configure an electromechanical transducer coupled to the disturbance for acting on the disturbance to at least partially suppress the vibration.

Claim 55 (New): The method of claim 54, wherein the transducer at least approximately matches a phase of the disturbance to at least partially suppress the vibration.

Claim 56 (New): The method of claim 54, wherein the transducer at least approximately matches a motion of the disturbance to at least partially suppress the vibration.

Claim 57 (New): The method of claim 56, wherein the motion includes the highest frequency of the vibration.

Claim 58 (New): The method of claim 54, wherein the characteristic of the disturbance is selected from the group consisting of: vibration amplitude, vibration frequency, vibration mode, physical strain, position, displacement, pressure, force, orientation, acceleration, motion, and a combination thereof.

Claim 59 (New): The method of claim 54, wherein the sensor is selected from the group consisting of: strain gauge, pressure sensor, PVDF film, accelerometer, active fiber composite sensor, composite sensor, and a combination thereof.

Claim 60 (New): The method of claim 54, including converting at least a portion of mechanical energy associated with the disturbance to electrical energy, using the transducer.

Claim 61 (New): The method of claim 60, including applying at least a portion of the electrical energy to the electrical circuit.

Claim 62 (New): The method of claim 60, including applying at least a portion of the electrical energy to the sensor.

Claim 63 (New): A system for at least partially suppressing a vibration of a mechanical disturbance, comprising:

an electromechanical transducer coupled to the disturbance and configured for exchanging mechanical energy with the disturbance;

a sensor coupled to the disturbance for measuring a characteristic of the disturbance; and

an electrical circuit in communication with the sensor and coupled to the transducer to configure the transducer for acting on the disturbance to at least partially suppress the vibration, based on the measured characteristic, wherein the electrical circuit includes at least one active switch.

Claim 64 (New): The system of claim 63, wherein the transducer at least approximately matches a phase of the disturbance to at least partially suppress the vibration.

Claim 65 (New): The system of claim 63, wherein the transducer at least approximately matches a motion of the disturbance to at least partially suppress the vibration.

Claim 66 (New): The system of claim 63, wherein the transducer is selected from the group consisting of: piezoelectric transducer, antiferroelectric transducer, electrostrictive transducer, piezomagnetic transducer, magnetostrictive transducer, magnetic shape memory transducer, and a combination thereof.

Claim 67 (New): The system of claim 63, wherein the sensor is selected from the group consisting of: strain gauge, pressure sensor, PVDF film, accelerometer, composite sensor, and a combination thereof.

Claim 68 (New): The system of claim 63, wherein the sensor is coupled to the disturbance by a mechanical amplifier.

Claim 69 (New): The system of claim 63, wherein the sensor is coupled to the disturbance by a hydraulic amplifier.

Claim 70 (New): The system of claim 63, wherein at least one of the at least one active switch is selected from the group consisting of: MOSFET, bipolar transistor, IGBT, SCR, and a combination thereof.

Claim 71 (New): The system of claim 63, wherein at least one of the at least one active switch includes a diode.

Claim 72 (New): The system of claim 63, wherein the electrical circuit includes a resonant circuit to at least approximately match a characteristic of the vibration.

Claim 73 (New): The system of claim 72, wherein the resonant circuit is coupled to the transducer to at least approximately match a behavior of the transducer.

Claim 74 (New): The system of claim 72, wherein the resonant circuit includes at least one capacitor.

Claim 75 (New): The system of claim 72, wherein the resonant circuit includes at least one inductor.

Claim 76 (New): The system of claim 63, wherein the electrical circuit includes a control circuit for controlling at least one of the at least one active switch.

Claim 77 (New): The system of claim 76, wherein the controlling employs a method selected from the group consisting of: rate feedback, positive position feedback, position-integral-derivative feedback (PID), linear quadratic Gaussian (LQG) control,

model-based control, a dynamic compensator-based control, and a combination thereof.

Claim 78 (New): The system of claim 76, wherein the controlling includes adjusting a duty cycle of the at least one of the at least one active switch, to configure the transducer for at least approximately matching a behavior of the disturbance.

Claim 79 (New): The system of claim 78, wherein the behavior of the disturbance includes a frequency of the vibration.

Claim 80 (New): The system of claim 78, wherein the behavior of the disturbance includes a phase of the vibration.

Claim 81 (New): The system of claim 78, wherein the electrical energy supplied to the transducer includes a voltage supplied to the transducer.

Claim 82 (New): The system of claim 63, wherein the electrical circuit includes an amplifier circuit coupled to the transducer for providing energy exchange between the electrical circuit and the transducer.

Claim 83 (New): The system of claim 82, wherein the amplifier circuit is selected from the group consisting of: a switching amplifier, a switched capacitor amplifier, a capacitive charge pump, an H-bridge amplifier, a half-bridge amplifier, and a combination thereof.

Claim 84 (New): The system of claim 82, wherein the electrical circuit includes a control circuit for controlling the amplifier circuit.

Claim 85 (New): The system of claim 84, wherein the controlling employs a method selected from the group consisting of: rate feedback, positive position feedback, position-integral-derivative feedback (PID), linear quadratic Gaussian (LQG) control, model-based control, a dynamic compensator-based control, and a combination thereof.

Claim 86 (New): The system of claim 84, wherein controlling the amplifier circuit includes adjusting a duty cycle of at least a portion of the amplifier circuit, to

configure the amplifier circuit for at least approximately matching a behavior of the disturbance.

Claim 87 (New): The system of claim 63, wherein the electrical circuit includes a rectifier circuit.

Claim 88 (New): The system of claim 87, wherein the rectifier circuit is coupled to the transducer.

Claim 89 (New): A system for at least partially suppressing a vibration of a mechanical disturbance, comprising:

an electromechanical transducer coupled to the disturbance and configured for converting at least a portion of mechanical energy associated with the disturbance to electrical energy;

an electrical circuit coupled to the transducer to process at least a portion of the electrical energy, wherein the electrical circuit includes at least one active switch; and

dissipating at least a portion of the processed electrical energy, thereby at least partially suppressing a vibration of the disturbance by reducing the mechanical energy associated with the disturbance.